

CLAIMS

What is claimed is:

1. In an integrated circuit (105) device (IC) having signal connections, power connections, and ground connections, the integrated circuit (105) having been placed in a package substrate (100), the package substrate having signal pad connections, power connections, and ground connections, a method for building a structure having interconnect wire bonds having controlled impedance, the method comprising: bonding a lower strip line (315) coupling a first ground connection of the IC to a first package substrate ground connection; bonding (320) with a plurality of wires, a plurality of signal pads on a device die, coupling the plurality of signal pads to signal pad connections on the package substrate, the plurality of signal pads in proximity to the first ground connection and the plurality of wires maintained at a first predetermined distance from the lower strip line; and bonding an upper strip line (325) coupling a second ground connection of the IC with a second package substrate ground connection, the upper strip line maintained at a second predetermined distance from the plurality of wires.
2. The method of claim 1 wherein the method further comprises: sealing openings (335) in the upper strip line and the lower strip line with a dielectric material, thereby trapping air in the structure.
3. The method of claim 2 wherein the dielectric material is a glue.
4. A strip line structure controlling impedance of bond wires in an integrated circuit (105) device (IC) placed in a package, the strip line structure comprising: a lower strip line (110, 115, 120) coupling a first ground connection in the IC (110a) with a first ground connection in the package (110b); an upper strip line (130, 135, 140) coupling a second ground connection on the IC (130a) with a second ground connection in the package (130b), the lower strip line and upper strip line being a predetermined distance apart from one another, forming a space accommodating a plurality of bond wires (125) whose wire diameters are less than the predetermined distance, the bond wires not in electrical contact with the upper strip line and the lower strip line, the bond wires coupling a signal pin (125a) on the IC with a signal connection in the package (125b).
5. The strip line structure of claim 4 wherein, the upper strip line and the lower strip line are glued together, hermetically sealing a space accommodating the plurality of bond wires.

6. The strip line structure of claim 5 wherein the space contains a dielectric selected from at least one of the following: vacuum, partial vacuum, nitrogen, oxygen, argon, xenon, neon, aerogels, and foams.

7. The strip line structure of claim 4 wherein the upper strip line and the lower strip line have an insulating material deposited on a side in proximity with the plurality of bond wires, respectively.

8. The strip line structure of claim 7 wherein the insulating material is selected from at least one of the following: polyimide, polyamide, soldermask, PTFE, TEFLON, and Kapton.

9. The strip line structure of claim 4, wherein the plurality of bond wires are covered with an insulating coating selected from at least one of the following: aluminum oxide, epoxy, thermoplastic, polyimide, and polyamide.

10. The strip line structure of claim 4 wherein the upper strip line and the lower strip line are comprised of copper.

11. The strip line structure of claim 4 wherein the upper strip line and the lower strip line are comprised of gold.

12. The strip line structure of claim 4 wherein the upper strip line and the lower strip line are comprised of silver.

13. The strip line structure of claim 4 wherein the upper strip line and the lower strip line are comprised of aluminum.

14. The strip line structure of claim 4 wherein the upper strip line and the lower strip line are comprised of a highly conductive material selected from: copper, gold, silver, aluminum and an alloy thereof.